Revue suisse de Zoologie 106 (2): 339-346; juin 1999

Hyphessobryscon wajat n. sp. from La Plata basin in Argentina (Characiformes: Characidae)

Adriana E. ALMIRON* & Jorge R. CASCIOTTA* **
* Departamento Científico Zoología Vertebrados, Museo de La Plata, Paseo del Bosque, 1900 La Plata, Argentina.
** Comisión de Investigaciones Científicas, Buenos Aires, Argentina

***Hyphessobrycon wajat* n. sp. from La Plata basin in Argentina (Characiformes: Characidae).** - *Hyphessobrycon wajat*, a new species is described from the río Paraná basin in Argentina. This species can be distinguished from its congeners by the following combination of characters: dorsal fin with a black spot, first two dorsal rays with their basal half dusky black, rays 4 to 8 and membranes completely black. Presence of a triangular caudal spot, covering all the base of the caudal fin rays, reaching symmetrically the end of the fin along its central rays. Three to five teeth on the maxilla. Two to four tricuspid teeth on the outer series of the premaxilla. Males lacking hooks on pelvic fins. Low body depth, between 22.8 and 28.8% of standard length.

Key-words: Characiformes - Characidae - *Hyphessobrycon* - new species.

INTRODUCTION

The genus *Hyphessobrycon* is a very speciose taxon within the family Characidae. There are about 70 nominal species, most of them living in the Amazonian basin (Géry 1977). Nineteen species were described from La Plata basin and South East Brazil (Géry 1977; Ringuelet *et al.* 1978; Miquelarena *et al.* 1980; Weitzman 1985; Mahnert & Géry 1987; Uj & Géry 1989). The aim of this paper is to describe a new species from La Plata basin in Argentina.

MATERIAL AND METHODS

Methods for counts and measurements follow Fink & Weitzman (1974) except where noted. Measurements were taken with a dial calliper reading 0.02 mm.

Cleared and stained (C&S) specimens were dissected under a WILD M-5 stereomicroscope, cleared in a buffered trypsin solution and stained following the procedures of Taylor & Van Dyke (1985).

Total vertebral count, taken in cleared and stained specimens includes all vertebrae of the Weberian apparatus, and the fused PU_1+U_1 of the caudal skeleton counted as one vertebra.

Manuscript accepted 13.11.1998

The examined material is deposited in MLP (Departamento Científico Zoología Vertebrados, Museo de La Plata, Argentina) and in MHNG (Muséum d'histoire naturelle, Genève, Switzerland).

COMPARATIVE MATERIAL (standard length, SL): *Hyphessobrycon anisitsi*; JRC pers. collection, 1 ex., 36.7 mm SL, (C&S), Argentina, Entre Ríos province, río Uruguay basin, Arroyo Marmol, between Colón and Ubajay. *Hyphessobrycon arianae*; MHNG 2412.79 (holotype), 1 ex. 22.7 mm SL, Paraguay, Dept. Caaguazu, río Güyrau-gua, affl. of the río Monday, 3 km East of Juan Frutos. MHNG 2412.80-81 (paratypes), 12 exs. 17.6-23.6 mm SL, (2 exs. C&S), same locality as holotype. *Hyphessobrycon* cf. *bifasciatus*; MLP 8408, 1 ex. 34.4 mm SL, Argentina, Corrientes province, pond in road Bella Vista-San Roque. MLP 8409, 1 ex., 30.8 mm SL, Argentina, Corrientes province, Arroyo Batel. *Hyphessobrycon eques*; MLP 8999, 3 exs., 23.3-27.9 mm SL, Argentina, Corrientes, río Santa Lucía, JRC pers. collection, 2 exs., 28.7-29.6 mm SL (C&S), Argentina, Corrientes province, Bella Vista, Riacho Carrizal. *Hyphessobrycon elachys*; MLP 6431, 3 exs., 16.0-20.0 mm SL, Argentina, Corrientes province, San Cosme. *Hyphessobrycon guarani*; MHNG 2366.99 (holotype), 1 ex. 29.8 mm SL, Paraguay, río Alto Paraná in Puerto Bertoni, Dept. Alto Paraná. MHNG 2366.100 (paratypes), 7 exs. 23.5 mm SL, (2 exs. C&S), same locality as holotype. *Hyphessobrycon luetkeni*; MLP 8796, 9 exs., 24.4-35.0 mm SL, Argentina, Formosa province, creek in the national road Formosa-Clorinda, 37 km far from Clorinda. MLP 6451, 13 exs., 14.2-21.6 mm SL, Argentina, Formosa province. *Hyphessobrycon meridionalis*; MLP 8407, 2 exs., 32.2-34.0 mm SL, Argentina, Corrientes province, pond in road Bella Vista-San Roque. JRC pers. collection, 3 exs., 33.0-40.9 mm SL (C&S), Argentina, Buenos Aires province, Berisso, Los Talas ponds. *Hyphessobrycon reticulatus*; MLP 8776, 3 exs., 30.0-36.8 mm SL, Argentina, Buenos Aires province, Delta del Paraná, Isla Talavera, Irigoyen Channel.

RESULTS

Hyphessobrycon wajat sp. n. Fig. 1

HOLOTYPE: MLP 9321, 27.6 mm SL, Argentina, Corrientes province, Laguna Brava (58° 44' W-27° 33' S). November 1989, R.J. Fernandez.

PARATYPES: MLP 7853, 10 exs., 25.3-27.8 mm SL, Argentina, Chaco province, Resistencia city, río Negro (59° 00' W-27° 26' S). February 1965?, M. Galván. MLP 7875, 10 exs., 21.9-27.6 mm SL, Argentina, Chaco province, Resistencia city, Laguna Blanca (59° 00' W-27° 26' S). December 1965, M. Galván. MLP 9322, 5 exs., 29.2-31.0 mm SL, Argentina, Corrientes province, Laguna Iberá (57° 08' W-28° S). November 1997, A. Almirón & J. Casciotta. MHNG 2593.96, 5 exs., 28.5-30.0 mm SL, Argentina, Corrientes province, Laguna Iberá (57° 08' W-28° 31' S). November 1997, A. Almirón & J. Casciotta.

DIAGNOSIS

Hyphessobrycon wajat is distinguished from other species of *Hyphessobrycon* by the presence of a black spot on dorsal fin, first two dorsal rays with their basal half dusky black, rays 4 to 8 and membranes completely black. A triangular caudal spot, covering all the base of the caudal fin rays, reaching symmetrically the end of the fin along its central rays. Three to five teeth on the maxilla. Two to four tricuspid teeth on the outer series of the premaxilla. Males lacking hooks on pelvic fins. Lower body depth, between 22.8 and 28.8% of SL.

DESCRIPTION

Morphometric values are given in table 1. Body elongate, laterally compressed. Greatest depth at pelvic fin origin. Predorsal body profile slightly convex. Body

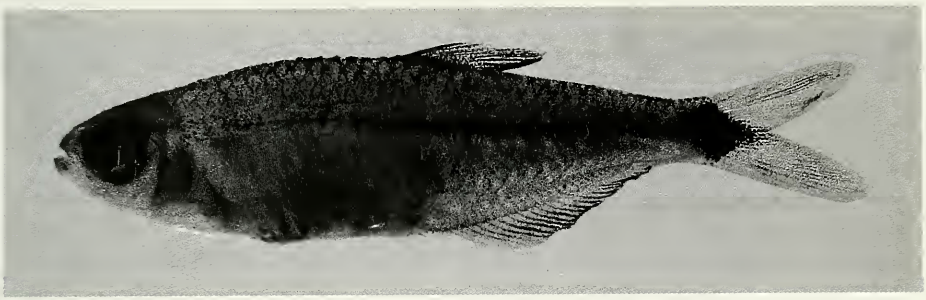


FIG. 1

Hyphessobrycon wajat, sp. n. holotype, MLP 9321, male, 27.6 mm SL; Argentina, Corrientes provinces, río Paraná basin, Laguna Brava.

profile along the dorsal fin base and posteriorly straight. Dorsal fin origin equidistant between the pelvic fin and the anal fin origins. Ventral body profile convex from snout tip to the pelvic fin origin, and almost straight from the latter point to the caudal fin base. Caudal peduncle slender. Head length less than 25% of the standard length, relatively deep, compressed. Eye large. Snout short, rounded, mouth terminal, tip of the snout slightly anterior to dentary. Third suborbital with its ventral margin in contact with the preopercular canal.

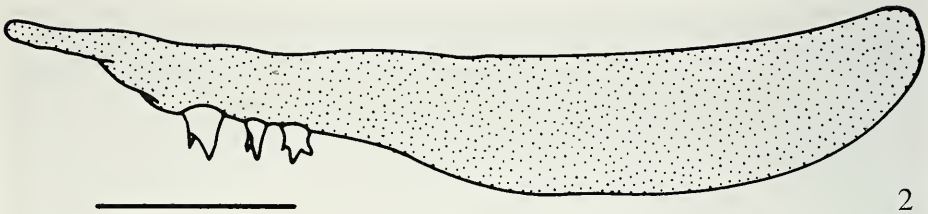
Maxilla slender, long, dorsal margin less curved than the ventral one (Fig. 2). Posterior tip of the maxilla surpasses the anterior margin of orbits. Maxilla with 3 to 5, usually 4 teeth. Maxillary teeth very small with one to three cusps. Premaxilla with

TABLE 1

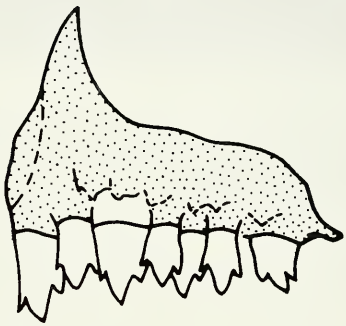
Morphometric characters of *Hyphessobrycon wajat*. Standard length is expressed in mm, measurements are percentages of standard length except the orbital diameter, snout length, and interorbital width, which are in percentage of head length. N: number of individuals; SD: standard deviation.

	Holotype	N	range	mean	SD
Standard length	27.6	20	21.9-27.6		
Body depth	27.1	20	22.8-28.8	26.5	1.46
Head length	23.5	20	22.2-25.1	23.7	0.80
Predorsal length	54.3	20	50.3-59.2	54.1	2.01
Caudal peduncle length	11.2	20	11.9-14.0	12.7	0.62
Caudal peduncle depth	10.1	20	8.2-10.4	9.5	0.46
Dorsal fin base	12.6	20	11.9-14.6	13.6	0.78
Anal fin base	33.3	20	29.5-36.0	32.5	1.49
Orbital diameter	38.4	20	38.1-47.4	41.2	2.43
Snout length	20.0	20	18.0-24.6	21.6	1.79
Interorbital width	30.7	20	29.5-37.2	33.8	2.44

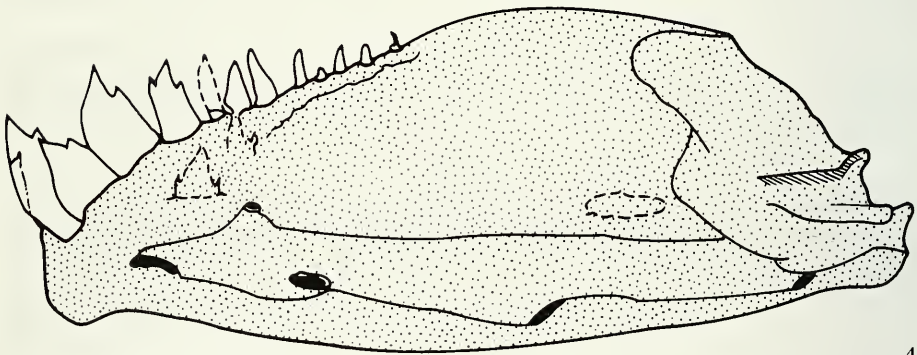
two tooth rows (Fig. 3). Inner premaxillary row with 4 to 5, usually 4 teeth. Teeth size bigger at the symphysis. Outer series bearing 2 to 4 teeth. Outer teeth about half the size of the inner ones. Both outer and inner teeth tricuspid, with the central cusp larger



2



3



4

FIGS 2-4

2. *Hyphessobrycon wajat*, sp. n. (MLP 7853), left maxilla, lateral view. Scale bar: 0.5 mm. 3. *Hyphessobrycon wajat*, sp. n. (MLP 7853), left premaxilla, lateral view. Scale bar: 0.5 mm. 4. *Hyphessobrycon wajat*, sp. n. (MLP 7853), left lower jaw, lateral view. Scale bar: 0.5 mm.

than the lateral ones. Dentary with 4 large tricuspid and 7 to 8 small unicuspid teeth (Fig. 4). Second teeth inserted anteriorly to the rest of the teeth of this series.

Dorsal fin rays ii, 8. Anal fin rays iii, 23 (4 exs. and the holotype), iii, 24 (15 exs.), iii, 25 (1 ex.). Last ray, which is divided, is counted as two. Anal fin with tiny hooks in males. Distal margin of anal fin straight in males, and concave in females. Pectoral fin rays i, 9 (8 exs.), i, 10 (11 exs.), i, 11 (1 ex. and holotype). Posterior tip of

pectoral fin reaching the pelvic fin origin. Pelvic fin rays i, 6 (15 exs. and the holotype), i, 7 (5 exs.). Pelvic fin without hooks in males. Posterior tip of the pelvic fin in males, longer than those of females. In males the tip of this fin reaches the first anal fin rays. Adipose fin present. Caudal fin rays i, 9/8, i (3 exs. C&S and the holotype). Caudal fin deeply forked, lower caudal fin lobe slightly longer than the dorsal one.

Scales 34 (6 exs. and the holotype), 35 (8 exs.), 36 (6 exs.) in lateral series. Seven to 10 (usually 8) perforated lateral line scales. Nine to 10 transverse scales from the dorsal fin to the anal fin origins.

Vertebrae counted only in cleared and stained specimens 35 (16+19, 1 ex.), 36 (16+20, 3 exs.).

Color in alcohol: Color description based on holotype unless otherwise noted (Fig. 1). Adult males and females with similar color pattern except for the dorsal, anal, and caudal fins which are more pigmented in males. Ground color pale yellow, nearly white.

Dorsally head, premaxilla, and anterior portion of lower jaw with many small dark chromatophores. Small dark chromatophores arround the lower margin of orbit, extending anteriorly to the premaxilla.

Scales of the dorsal half of body bearing small chromatophores on their outer margin, forming a reticulate pattern above midline. Scattered chromatophores between anal fin base and midline, following myopsepta.

Narrow dark midlateral stripe extending from about the 5th scale of the lateral series to the caudal spot, chromatophores of this stripe larger than those of the rest of the body. Humeral spot somewhat ovoid, elongate dorso-ventrally, not well preserved in the holotype.

Pectoral fin with scattered chromatophores on the first rays. Pelvic fin hyaline.

Dorsal fin spot present, first two dorsal rays with their basal half dusky black, rays 4 to 8 and membranes completely black.

Anal fin dusky black, across 2/3 of its distal portion, from the 5th ray to the end of the fin. The remaining portion of the fin with scattered chromatophores.

Caudal spot symmetrical and conspicuous, formed by medium sized chromatophores. Caudal spot extended onto the base of the marginal caudal rays at the base. Posteriorly, on caudal fin, the spot is triangular, reaching the tip of the middle caudal rays.

Color in life: Dorsal half of body yellow, ventral one silvery. Pectoral and pelvic fins hyaline. Dorsal fin red bearing a black spot as described above. Anal fin red with the first six rays whitish, distal portion, from the 5th ray onwards black. Caudal fin red with a deeply black spot as described above.

ETYMOLOGY: The specific name wajat is derived from the Mataco-Mataguayo word "waját" meaning fish. The Matacos is one of the main ethnic groups inhabiting the North East of Argentina where some fishes of this species were collected.

DISTRIBUTION: This species is known from the río Paraná basin in Argentina (Fig. 5).

COMPARISON: Considering the artificial groups of GÉRY (1977) for the species of *Hyphessobrycon*, *H. wajat* should be compared with the following groups: 1- species

FIG. 5

Geographic distribution of *Hyphessobrycon wajat* sp. n. . Triangle: indicates type locality (Argentina, Corrientes province, río Paraná basin, Laguna Brava). Circle: indicates two localities, Chaco province, Resistencia city, río Negro and Laguna Blanca. Square: Corrientes province, Laguna Iberá.

with humeral and caudal spot and a suborbital in contact with the preopercular canal (group d). This group includes *Hyphessobrycon duragenys* and *Hyphessobrycon reticulatus*. *Hyphessobrycon wajat* differs from these species in having more anal fin rays. 2- species bearing caudal spot (group c), *H. wajat* differs from these species in having a black dorsal fin spot, absent in group c. 3- species having a black spot on the dorsal fin, such as the *Hyphessobrycon callistus* group (f); *H. wajat* can be distinguished from this group in having a caudal fin spot which is absent in the (f) group. 4- species included in the *H. compressus* group (g) (*H. compressus*, and *H. milleri*) are similar to *H. wajat* in having a dorsal fin spot, however this group has higher number of longitudinal scales (45 to 49 instead of 34-36 in *H. wajat*).

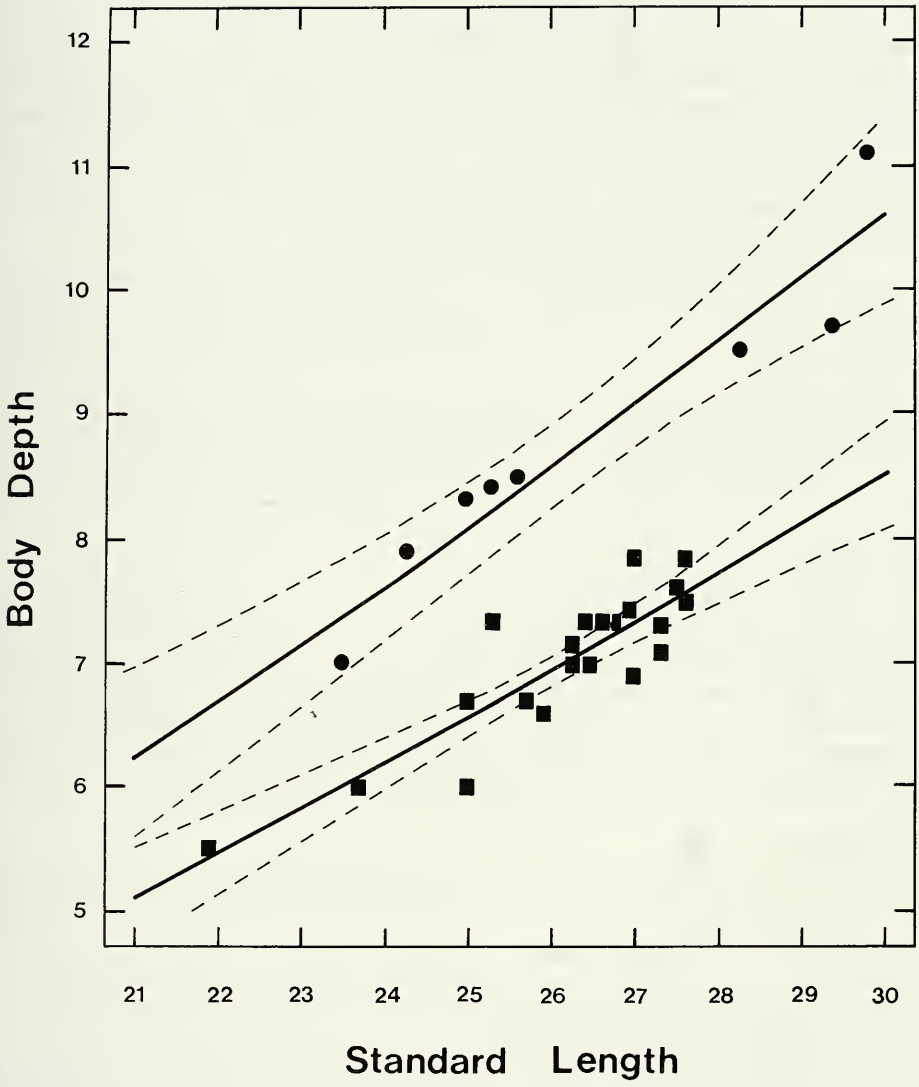


FIG. 6

Body depth as a function of SL for *H. wajat* sp. n. (squares) (lnY= -2.73087 + 1.43248lnX; r=0.897) and *H. guarani* (circles) (lnY= -2.72693 + 1.49641lnX; r= 0.957).

Besides the species groups considered by GÉRY (1977) mentioned above, *H. wajat* should be compared with *H. guarani* described by Mahnert & Géry (1987) and *H. arianae* described by UJ & GÉRY (1989). *Hyphessobrycon wajat* is close to *H. guarani* in overall similarity. However *H. wajat* differs from *H. guarani* in the following character states. In *H. guarani* the caudal spot is asymmetrical and

restricted to the central rays extended from the base to the tip of the caudal fin. At the base of the caudal fin, the spot does not reach the marginal rays. In *H. wajat* the caudal spot is symmetrical and extended to the tip of the caudal fin. At the base of the caudal fin it includes the marginal rays. The dorsal fin spot in *H. guarani* is restricted to the base and tip of posterior rays, in *H. wajat* the dorsal spot includes the basal half of the two first rays and the whole 4 to 8 rays. A lower body depth, 3.4-4.1 in *H. wajat* versus 2.8-3.2 in *H. guarani* (Fig. 6). *Hyphessobrycon wajat* lacks hooks on the pelvic fin rays in males, present in *H. guarani*.

Hyphessobrycon wajat differs from *H. arianae* by the presence of great number of tricuspid maxillary teeth (3-5 instead of 1-2 teeth with 5 cusps in each tooth in *H. arianae*) and the greater number of anal-fin rays (26-30, vs 18-23 in *H. arianae*). *Hyphessobrycon wajat* has the second tooth in the dentary implanted forward, whereas all teeth in *H. arianae* are placed in the same line. *Hyphessobrycon wajat* lacks th pseudotympanum at humeral region present in *H. arianae*. The dorsal fin in *H. wajat* bears a black spot whereas in *H. arianae* the dorsal fin is uniformly grayish. *Hyphessobrycon wajat* has 19 to 20 caudal vertebrae instead of 17-18 in *H. arianae*.

ACKNOWLEDGEMENTS

We are grateful to S. Muller for the loan of *H. guarani* and *H. arianae* (Muséum d'histoire naturelle, Genève, Suisse). To M. Martinez (Museo de La Plata, La Plata, Argentina) who help us with the native specific name. To C. Tremouilles for help with the figures. To M. Azpelicueta (Museo de La Plata, La Plata, Argentina) for the critical review of the manuscript and S. Menu-Marque (Facultad de Ciencias Exactas y Naturales, Buenos Aires, Argentina) who kindly revised the English.

REFERENCES

Fink, W.L. & S.H. Weitzman. 1974. The so-called cheirodontin fishes of Central America with descriptions of two new species (Pisces: Characidae). *Smithsonian Contribution to Zoology*, 172: 1-46.

Géry, J. 1977. Characoids of the world. T. F. H., public. 672 pp.

Mahnert, V. & J. Géry. 1987. Deux nouvelles espèces du genre *Hyphessobrycon* (Pisces, Ostariophysi, Characidae) du Paraguay: *H. guarani* n. sp. et *H. procerus* n. sp. *Bonner zoologische Beitrage* 38 (4): 307-314.

Miquelarena, A. M.; R. C. Menni; H. L. Lopez & J. R. Casciotta. 1980. Descripción de *Hyphessobrycon igneus* sp. nov. (Characidae Tetragonopterinae) y nuevas localidades para peces de la República Argentina. III. *Neotrópica*, 26 (76): 237-245.

Ringuelet, R. A.; A. M. Miquelarena & R. C. Menni. 1978. Presencia en los alrededores de La Plata de *Characidium* (*Jobertina*) *rachowi* y de *Hyphessobrycon meridionalis* sp. nov. (Osteichthyes, Tetragonopteridae). *Limnobios*, 1 (7): 242-257.

Taylor, W. R. & G. C. Van Dyke. 1985. Revised procedures for staining and clearing small fishes and other vertebrates for bone and cartilage. *Cybium*, 9: 107-119.

Uj, A. & J. Géry. 1989. Deux nouvelles espèces de Tetras (Poissons Characoïdes, Characidae auct., Tetragonopterinae) du Paraguay: *Hyphessobrycon arianae* n. sp. et *Hemigrammus mahnerti* n. sp. *Revue suisse de Zoologie* 96 (1): 147-159.

Weitzmann, M. 1985. *Hyphessobrycon elachys*, a new miniature characid from eastern Paraguay (Pisces: Characiformes). *Proceedings of the Biological Society of Washington* 98 (4): 799-808.